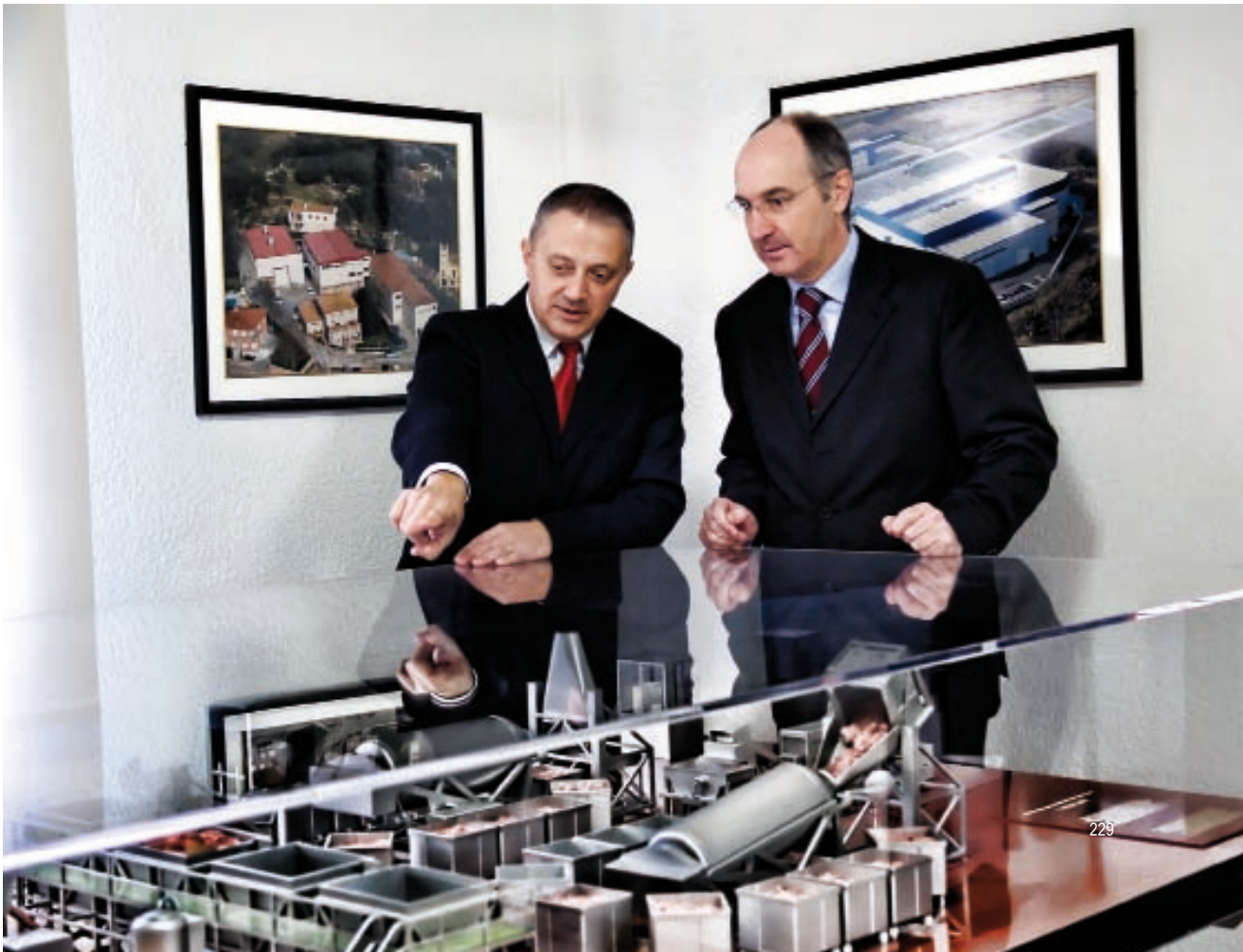
Radio frequency identification: profitable intelligence for the meat sector

Josep Lagares, Joan Maria Cassany, Àlex Rodríguez, Daniel Borrell, Marta Xargayó



INTRODUCTION

Intelligent management of information is indispensable for decision making in any organization. For this purpose, there are a number of tools that facilitate monitoring and analyzing the company's activity, its sales outlook, the attainment of objectives, as well as many other strategic aspects and conditioning factors. Intelligent analysis of this information provides for decision making and the application of preventive / corrective measures quickly and effectively when faced with any challenge or deviation.

If this is true in the day-to-day running of organizations, then why not have similar management tools for the intelligent gathering and analysis of information regarding the different production processes at the plant level? Nobody can deny that the information generated in said operating processes is equally or more important than the information generated by the strategic and administrative processes, which provides exhaustive knowledge of business matters and allows for the identification of those internal weaknesses and strengths that underscore the difference with the competition and, in the end, become a differentiating factor that the majority of suppliers and customers in the meat sector in particular, and the food sector in general, certainly recognize and appreciate.

RFID AND INTELLIGENT INFORMATION MANAGEMENT

Very frequently, some of the most disruptive technological solutions for monitoring the production process that are introduced in the market do not prosper due to insufficient value/risk analysis in the preliminary stages of conception; factors such as easiness of application, technological reliability, minimum maintenance, quick investment return, overall value provided, etc. not having been sufficiently considered in the product development phases, these projects are rendered incapable of evolving and simply become "future projects with great possibilities".
However, one of these cutting-edge technologies that has prospered, because it offers greater efficiency and reliability in the automated obtaining of data, as well as endless differential value, due to an intelligent process of said information, is radio frequency identification, commonly known as RFID.

One of the advantages of this new technology, in comparison with others of its kind, is its capacity to obtain multi-information (multi-reading) in a robust way and without the need for direct vision or contact with the object to be identified, thereby opening the door to real time automated data gathering (requiring no operators), and all the operative and logistic advantages that entails, with a real and effective application in a good number of processes involved in the operations of the meat industry in particular and the food industry in general.

Today there are many big companies that have already begun to introduce technological systems, of greater or lesser complexity, based on RFID radio frequency identification in their production facilities. We need look no further than traceability systems, capable of automated real time data reception, intelligent warehouse management systems with real time monitoring of warehouse inventory, as well as the exact localization of each product, controlled access to restricted and/or prohibited areas, monitoring of operator hygiene, food safety management, or the intelligent management of operator productivity and/or goods, etc. which are only some of the applications with a direct impact on the Financial States of Organizations based on RFID radio frequency identification that are currently being introduced in the sector.

RFID, A MATURE TECHNOLOGY

An RFID system consists of a tag (electronic microchip with an antenna), an RFID reader and a subsystem of data processing (middleware). The

reader, which is constantly sending out signals, detects any tag that is in its vicinity or within its field of reading. When it picks up a signal from a tag, its information is extracted and sent to the middleware for intelligent processing and storage.
With RFID radio frequency identification technology it is possible to obtain simultaneous readings (multi-reading) of objects, products, vehicles or personnel, in a sturdy way (the tags are much more resistant to the aggressiveness of some production processes than a conventional tag), while making the process of identification substantially easier. In the same manner, this innovative technology makes it possible to read the data of the tags attached to the objects or products, even when they are outside the field of vision and without direct contact between the product and the RFID reader.

If there is still some wariness in the sector concerning RFID technology, it is due to unfamiliarity with the technology and to the unsuccessful introduction of some pilot projects carried out by people without sufficient knowledge of the technology, or to projects that technologically have not been able to meet the expectations generated "a priori". In contrast, counting on expert consultants and organizations with extensive know-how of RFID technology, able to analyze the site where the technology is to be introduced, modify and adapt any component, guarantee proper maintenance, and introduce possible improvements or new developments to the product, has led to the successful introduction of RFID projects that provide technological and operating advantages and Investment Returns that are very attractive and differential for meat processors around the world.

RANGE OF PERFORMANCE OF RFID TECHNOLOGY IN THE MEAT SECTOR

As a logical process and due to its easy application, RFID technology has started being applied in the logistic field of meat industries where, thanks to the advantages it offers, it represents a significant evolution with respect to previously used systems (conventional labels, bar codes, etc.). But there is a diversity of fields and applications possible in the various production areas of meat sector companies, offering each of these multiple improvements and benefits in its chain of value, which include:

Food safety

Food safety is an established reality in our society, being an especially sensitive issue for the consumer and an opportunity/risk for companies in the sector.

RFID radio frequency identification technology provides for controlling and monitoring the different stages of the production process, minimizing any risk of food contamination, ensuring food safety and optimizing the shelf life of the finished product.

It is within this context that the solutions offered are multiple, compact, modular and aimed at the following points: monitoring personal hygiene of the operators, tracking of the cooling line, restrictions/ prohibitions of access to certain equipment and/ or areas in the production line, among many other applications.

A tag incorporated in the clothing of the operators provides for identification of each individual wherever he may be, from the hygiene zone to the doors of access to the plant, including the machinery he has manipulated in any process.

Improves and monitors productivity

Productivity of the processing lines and productivity of personnel are key factors in competitiveness, so that improvement and control in this area play a critical role in determining the profitability and viability of today's food industry.

On-line management and the exhaustive monitoring of personnel and production processes allows for identifying the critical points in the line and, once these have been detected, applying suitable preventive/corrective actions for their optimization. As such, RFID technology offers different solutions for different problems by providing a continual flow of information, applicable at three levels: productivity generated by each work shift, by each individual operator, and product data.

This information makes the line's production capacity available in real time, and intelligent management of the data obtained makes it possible to detect and reduce down time, locate bottlenecks or receive real time alerts of any abnormality, so that the necessary measures can be taken immediately. At the same time, information is provided on the relation of quality to the product and its supplier, which is a key tool for optimizing the purchasing conditions of raw material or, for example, establishing systems of bonuses for operators in relation to the yields and/or losses generated.

RFID technology also provides a wider and more general monitoring of the productivity of all operators, recording their comings and goings in the different zones of the plant. This solution also has special importance within the scope of complementary safety of personnel, since it generates a real time map of the location of each person inside the facilities and any risk thereby incurred.

▲ Intelligent RFID Management in the deboning line.

Energy savings and efficiency

The importance of intelligent energy management is becoming more evident as people are increasingly aware of global warming of the planet, making this one of the main challenges for industry worldwide. Energy savings and efficiency not only have an important beneficial impact on the environment, but also on the economic margins of processing companies.

The integral solution for management of refrigerated or temperature-controlled rooms, by means of wireless devices based on ZigBee technology, is equipped with various humidity and temperature sensors, combined with a software solution that provides for managing a system of alarms and data monitoring in the chilling rooms, through a wireless and robust real time network. The network of sensors, together with the intelligent software, prevent unnecessary waste of energy, optimizing costs that are difficult to manage by other means.

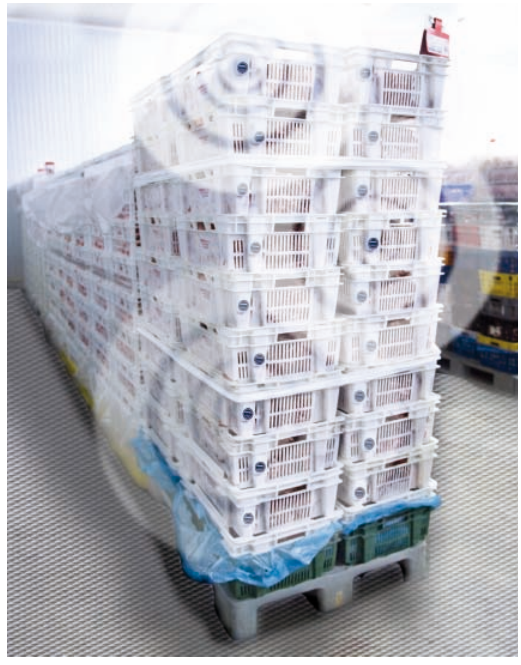
▲ Energy management of chilling rooms.

Management of warehouses and stock

The food industry generally follows a policy of "to-stock manufacturing". According to this policy, the inventory of finished product should be available to the market whenever needed. Therefore, on-line real time management of the information generated in the different warehouses and intermediate points (delivery, manufacture and dispatch) is vital for regulating the productive and logistic flow of a company.

RFID technology provides an integral solution for the control of inventories by means of a multi-reading system, without contact or direct viewing, that makes it possible to manage and control most efficiently the movement of goods, determine what processing phase is being undergone by each production batch, know how many units there are in each warehouse, how much raw material is available and what the production capacity of the lines is, in relation to changing demand.

In addition, a system of management and traceability of goods with real time connection to the rest of the ERP's, drastically reduces management errors, improves the quality of service, increases the productivity of processes and improves the liquidity ratios of companies.



▲ Multi-reading Management of Raw Material with RFID tags.

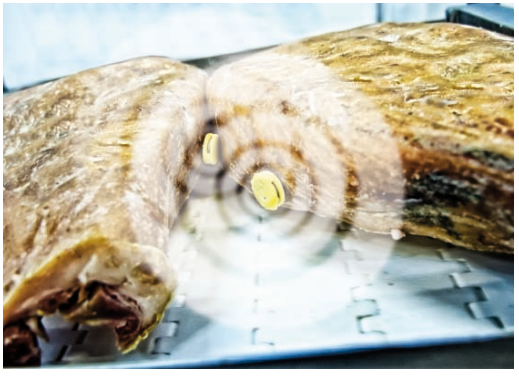
▲ Exact localization in warehouse with RFID technology.

Intelligent Traceability, global and in real time

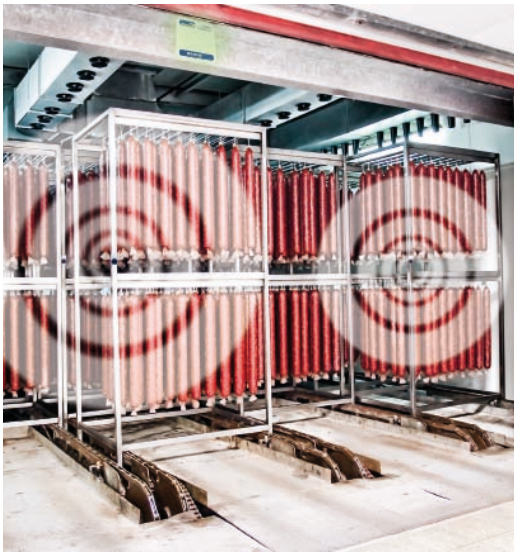
The management of traceability allows for reviewing a product's history by means of recorded data. For a number of years now this has been the object of many studies, methods and technologies in an

effort to apply it in an adaptable, quick and efficient way to the entire chain of value. Unfortunately, most of these attempts and developments have been done in a piecemeal manner, gathering a great deal of data semi-manually, with the help of bar code readers, and often struggling with tags that are not very sturdy (dirty, bent and/or lost). However, today there are other means and technologies available that give a new meaning to the word "traceability". These systems, of greater or lesser complexity, have given rise to the concept of "Intelligent Traceability". If in addition implantation of the system can be done in a generalized way and the data can be transmitted in real time, this provides for a system of information that is practical, very useful, one that generates value for companies.

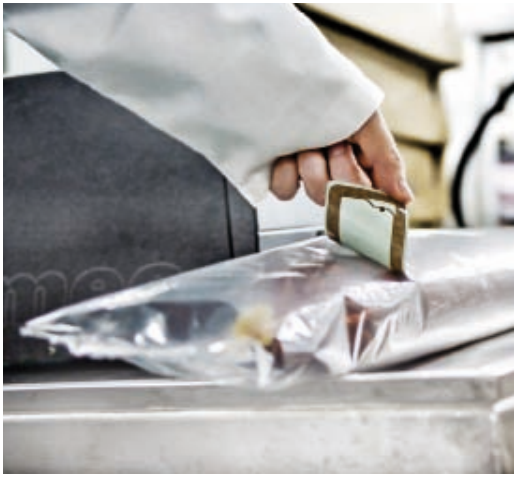
In order to obtain total traceability of a food product, it is necessary to record all the movements it undergoes throughout the different stages of the chain of value: supply, production, distribution, etc. The strategic placement of RFID tags and the corresponding "without contact" readers allows for recording the different data of the production process and ensures traceability of the finished product, as well as pinpointing guidelines for the optimization of said process.



▲ Intelligent Traceability of cured products.



▲ Traceability in the maturation and drying rooms .



▲ Traceability with RFID tags in the packaging.

Complementary personnel safety

In most industries, the main risks and dangers posed to personnel are identified by programs of Analysis and Prevention of Labor Risks. Such programs involve an evaluation of existing risks, a series of preventive measures to guard against them, and monitoring their effectiveness.

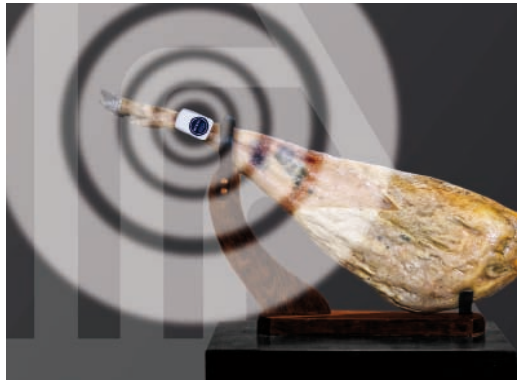
At the same time, companies that manufacture and supply machinery and processing lines for the food industry must also continually adapt and improve the design of their equipment in order to ensure and optimize said safety.
Nonetheless, these preventive measures may be insufficient in real life, and therefore labor accidents still happen, accidents that could be easily avoided by restricting access to equipment, vehicles and work areas by means of the innovative technological solutions offered by RFID identification, which provides a complementary cutting-edge safety system for personnel working in processing lines of the 21st century.
In said systems, simple software provides for managing the identities of the different operators who may be running a machine, driving a vehicle (forklifts, etc.), accessing a particular zone (chilling room, warehouse, maintenance area, etc.), among many other options. The operator only needs to be properly identified, and only if he is authorized will access be permitted to carry out the desired operation.
This solution not only prevents irreparable injury to personnel, but can also protect the processor from costly claims and indemnifications derived from labor accidents.

▲ Complementary personnel safety.

Trademark protection

Exclusive and high-prestige products are very attractive for counterfeiters. In the meat and food industry there are a number of high-end products that are much appreciated by the consumer and therefore susceptible to these dishonest practices, which can result in negative economic consequences for the processor.

By means of the exclusive labeling systems using RFID tags, falsification can be effectively stopped by providing personalized and individual identification for each product and each process. The unique RFID tag guarantees authenticity and quality of the product while guarding against falsifications and manipulations, thereby maintaining trademark prestige and generating additional economic benefit at the origin.

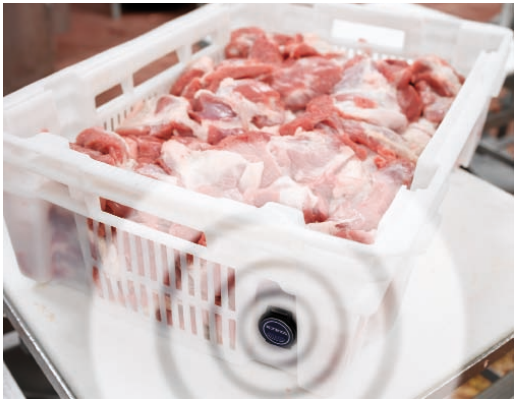


▲ Certification of quality and trademark protection.

Management of goods

The food industry in general, and the meat industry in particular, often demand specific management to monitor operational and/or moving goods (trays, boxes, tanks, knives, etc.) whether for purposes of traceability, mobility of goods, food safety, sanitation control, etc. The identification and monitoring of said goods is often complicated and frequently results in goods getting lost or mislaid, disruptions in traceability, breakdowns in the sanitation chain, etc. The use of RFID tags allows for intelligent monitoring and management of said goods, resulting in a reduction of losses

and ensuring strict compliance with international guidelines for traceability, safety and hygiene.



▲ Intelligent Management of Material Goods.

CONCLUSIONS

RFID technology and the advantages it provides in comparison with other systems of identification and data gathering: global control, storage capability, agility, multi-reading data gathering, tag sturdiness, identification without eye contact, versatility of application and integration capability are, among others, factors in competitiveness that the modern meat industry cannot afford to ignore. The correct and properly planned use of this innovative technology is a key factor in the intelligent and profitable management of information that will, without doubt, impact the meat processing centers of the future.

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